

In the Claims:

Please amend the claims as follows:

Claims 1-56 (cancelled)

57. (New) An isolated nucleic acid that encodes a mutant Δ^7 sterol C-5 desaturase polypeptide, said mutant Δ^7 sterol C-5 desaturase polypeptide truncated N-terminal to a histidine cluster domain as compared to a wild type Δ^7 sterol C-5 desaturase polypeptide.

58. (New) The isolated nucleic acid of claim 57, wherein said truncation of said mutant Δ^7 sterol C-5 desaturase polypeptide occurs at a position N-terminal to the His1 histidine cluster domain as compared to a wild type Δ^7 sterol C-5 desaturase polypeptide.

59. (New) The isolated nucleic acid of claim 57, wherein said truncation of said mutant Δ^7 sterol C-5 desaturase polypeptide occurs at a position N-terminal to the His3 histidine cluster domain as compared to a wild type Δ^7 sterol C-5 desaturase polypeptide.

60. (New) The isolated nucleic acid of claim 59, wherein said truncation of said mutant Δ^7 sterol C-5 desaturase polypeptide occurs at a position C-terminal to the His2 histidine cluster domain and N-terminal to the His 3 histidine cluster domain as compared to a wild type Δ^7 sterol C-5 desaturase polypeptide.

61. (New) The isolated nucleic acid of claim 57, wherein said nucleic acid comprises an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide consisting of positions 143 to 322 of SEQ ID NO:20;
- (b) a polynucleotide consisting of positions 143 to 1552 of SEQ ID NO:20;
- (c) a polynucleotide having at least 70% identity to (a) or (b); and
- (d) complements of (a), (b), or (c).

62. (New) A polynucleotide comprising a control element operably linked to the isolated nucleic acid of claim 57.

63. (New) A transgenic plant comprising the polynucleotide of claim 62.

64. (New) A host cell comprising the polynucleotide of claim 62.

65. (New) A Δ^7 sterol C-5 desaturase coding sequence having at least one mutation, said at least one mutation encoding a stop codon, said at least one mutation at a position N-terminal to a histidine cluster domain present in the corresponding Δ^7 sterol C-5 desaturase wild type coding sequence.

66. (New) The Δ^7 sterol C-5 desaturase coding sequence of claim 65, wherein said at least one mutation is at a position N-terminal to the His1 histidine cluster domain present in the corresponding Δ^7 sterol C-5 desaturase wild type coding sequence.

67. (New) The Δ^7 sterol C-5 desaturase coding sequence of claim 65, wherein said at least one mutation is at a position N-terminal to the His3 histidine cluster domain present in the corresponding Δ^7 sterol C-5 desaturase wild type coding sequence.

68. (New) The Δ^7 sterol C-5 desaturase coding sequence of claim 67, wherein said at least one mutation is at a position C-terminal to the His2 histidine cluster domain and N-terminal to the His3 histidine cluster domain present in the corresponding Δ^7 sterol C-5 desaturase wild type coding sequence.

69. (New) The coding sequence of claim 65, wherein said coding sequence comprises an isolated polynucleotide selected from the group consisting of:

- (a) a polynucleotide consisting of positions 143 to 322 of SEQ ID NO:20;
- (b) a polynucleotide consisting of positions 143 to 1552 of SEQ ID NO:20;
- (c) a polynucleotide having at least 70% identity to (a) or (b); and

(d) complements of (a), (b), or (c).

70. (New) A polynucleotide comprising a control element operably linked to the coding sequence of claim 65.

71. (New) A transgenic plant comprising the polynucleotide of claim 70.

72. (New) A host cell comprising the polynucleotide of claim 70.

Q2
ent
73. (New) A mutant Δ^7 sterol C-5 desaturase coding sequence that encodes a truncated Δ^7 sterol C-5 desaturase, said truncated Δ^7 sterol C-5 desaturase truncated N-terminal to a histidine cluster domain present in the corresponding wild type Δ^7 sterol C-5 desaturase coding sequence, and said truncated Δ^7 sterol C-5 desaturase ineffective for catalyzing the desaturation of episterol to 24-methylenecholesterol and campesterol.

74. (New) The mutant Δ^7 sterol C-5 desaturase coding sequence of claim 73, wherein a plant expressing said mutant Δ^7 sterol C-5 desaturase exhibits an approximately four-fold accumulation in the level of said episterol compared to a corresponding plant expressing a wild type Δ^7 sterol C-5 desaturase coding sequence.

75. (New) A polynucleotide comprising a control element operably linked to the coding sequence of claim 73.

76. (New) A transgenic plant comprising the polynucleotide of claim 75.

77. (New) A host cell comprising the polynucleotide of claim 75.

78. (New) A method of producing a transgenic plant comprising:

a) introducing the polynucleotide of claim 62 into a plant cell to produce a transformed plant cell; and

Applicant : Sunghwa Choe, et al.
Serial No. : 09/775,879
Filed : February 2, 2001
Page : 6 of 8

Attorney's Docket No.: 11696-069001
2008-55300-US-U-00002.01

02 b) producing a transgenic plant from said transformed plant cell.
